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Research Note

NORTHERN ROCKY MOUNTAIN
FOREST AND RANGE EXPERIMENT STATION

Missoula, Montana

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VOLUME DISTRIBUTION IN PONDEROSA PINE TREES[1/]

Just what percentage of the gross merchantable volume is contained in each log of a ponderosa pine tree, whether it has two, three, or up to eight logs, is shown in the following table,[2/] based on tree measurements taken in western Montana and northern Idaho.

Log position in tree	Percentage distribution of gross merchantable volume (Scribner Decimal C) by logs, for ponderosa pine trees of indicated number of 16-foot logs per tree						
	2	3	4	5	6	7	8
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Butt	62	47	38	32	28	25	23
2	38	34	30	27	24	22	20
3		19	21	20	19	19	18
4			11	14	15	15	15
5				7	9	10	11
6					5	6	7
7						3	4
8							2
Tree total	100	100	100	100	100	100	100
Basis, number trees	89	381	426	167	39	21	7

1/ By C. A. Wellner and R. Hansen, Division of Silviculture.
2/ A similar table for western white pine was released by the Northern Rocky Mountain Forest and Range Experiment Station as Applied Forestry Notes no. 75, "What Percent of Tree Volume is in Each Log of a Western White Pine Tree?" By E. F. Rapraeger. May 15, 1936.

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The foregoing table is based on measurements of 1,130 trees ranging from 10 to 44 inches in diameter. As the percentage distribution of volume is not greatly influenced by diameter of the tree, the figures of the table apply to all diameters within the range of the trees measured.

The term "gross merchantable volume," as used in the table, refers to the volume of wood between the stump and the top end of the last utilized log. It includes utilized logs and also all waste material such as breakage, cull logs, and defect within utilized logs.

The table was prepared especially for the use of timber sales men in the northern Rocky Mountain region. They should find it helpful in determining deductions for visible defect when making tree measurement sales. For example,3/ a 5-log tree has a catfaced butt. It is estimated that one-half of an 8-foot section, or one-fourth of the butt log, is cull. The table shows that the butt log of a 5-log tree contains 32 percent of the total tree volume. One-fourth of this value gives 8 percent as the proper deduction to make from the gross volume of the tree to allow for the catface. Or, to give another example, a 6-log tree has a sharp crook in the second log, which will necessitate the cutting out of a 4-foot section to eliminate the crook. According to the table, the second log of a 6-log tree contains 24 percent of the tree volume, and one-fourth of this gives 6 percent as the proper deduction to make from the gross volume. Numerous other like uses for the figures will occur to timber sales men.

3/ These examples were suggested by George E. Stoltz of the Bitterroot National Forest, at whose request the table was prepared.